

Amendments to the Claims

The listing of claims below will replace all prior versions and listings of claims in the present application.

Claim Listing

1-66. (Cancelled)

1 67. (New) A method comprising:
2 providing a first queue corresponding to a first media access control (MAC)
3 device to which data is to be transmitted over a network;
4 receiving data destined for at least one of the first MAC device and a client of the
5 first MAC device;
6 storing at least a portion of the data destined for the at least one of the first MAC
7 device and the client of the first MAC device in the first queue;
8 receiving information indicating a need to change an amount of data being
9 transmitted to the at least one of the first MAC device and the client of the
10 first MAC device;
11 selectively transmitting data stored in the first queue to the at least one of the first
12 MAC device and the client of the first MAC device; wherein a rate at
13 which the selectively transmitting is performed is based at least in part on
14 at least a portion of the information indicating the need to change the
15 amount of data being transmitted to the at least one of the first MAC
16 device and the client of the first MAC device.

1 68. (New) The method of claim 67 further comprising:
2 providing a second queue corresponding to the first MAC device to which data is
3 to be transmitted over the network;
4 storing at least another portion of the data destined for the at least one of the first
5 MAC device and the client of the first MAC device in the second queue;
6 and

7 selectively transmitting data stored in the second queue to the at least one of the
8 first MAC device and the client of the first MAC device; wherein a rate at
9 which the selectively transmitting of data stored in the second queue is
10 performed is based at least in part on one of:
11 the at least a portion of the information indicating the need to change the
12 amount of data being transmitted to the at least one of the first
13 MAC device and the client of the first MAC device; and
14 at least another portion of the information indicating the need to change
15 the amount of data being transmitted to the at least one of the first
16 MAC device and the client of the first MAC device.

1 69. (New) The method of claim 68 wherein the first queue is for data having a
2 first priority level, and wherein the second queue is for data having a second priority
3 level.

1 70. (New) The method of claim 67 further comprising:
2 providing a second queue corresponding to a second MAC device to which data is
3 to be transmitted over the network;
4 receiving data destined for at least one of the second MAC device and a client of
5 the second MAC device;
6 storing at least a portion of the data destined for the at least one of the second
7 MAC device and the client of the second MAC device in the second
8 queue; and
9 selectively transmitting data stored in the second queue to the at least one of the
10 second MAC device and the client of the second MAC device; wherein a
11 rate at which the selectively transmitting of data stored in the second
12 queue is performed is based at least in part on information indicating a
13 need to change an amount of data being transmitted to the at least one of
14 the second MAC device and the client of the second MAC device.

1 71. (New) The method of claim 67 wherein the first queue is provided in a
2 memory coupled to at least one of another MAC device and a client of the another MAC
3 device.

1 72. (New) The method of claim 67 wherein the first queue is provided in a
2 memory belonging to one of another MAC device and a client of the another MAC
3 device.

1 73. (New) The method of claim 67 wherein the information indicating a need to
2 change the amount of data being transmitted to the at least one of the first MAC device
3 and the client of the first MAC device includes at least one of: a MAC device address, a
4 data transmission rate, a ramp factor, a threshold value, a network link bandwidth value,
5 and a flag.

1 74. (New) The method of claim 67 wherein the information indicating a need to
2 change the amount of data being transmitted to the at least one of the first MAC device
3 and the client of the first MAC device is received from at least one of the first MAC
4 device, the client of the first MAC device, another MAC device, and a client of the
5 another MAC device.

1 75. (New) The method of claim 67 wherein the selectively transmitting data
2 stored in the first queue further comprises selectively transmitting data stored in the first
3 queue in one of a first egress direction and a second egress direction.

1 76. (New) The method of claim 67 further comprising:
2 receiving information indicating a need to change an amount of data being
3 transmitted on a first network link between the first MAC device and
4 another MAC device;
5 selectively transmitting data being selectively transmitted to the at least one of the
6 first MAC device and the client of the first MAC device; wherein another
7 rate at which the selectively transmitting of data being selectively

8 transmitted is performed is based at least in part on at least a portion of the
9 information indicating the need to change the amount of data being
10 transmitted on the first network link.

1 77. (New) The method of claim 76 wherein the information indicating the need
2 to change the amount of data being transmitted on the first network link includes at least
3 one of: a MAC device address, a data transmission rate, a ramp factor, a threshold value,
4 a network link bandwidth value, and a flag.

1 78. (New) The method of claim 67 further comprising:
2 receiving information indicating a need to change an amount of data being
3 transmitted on a first network link between the first MAC device and
4 another MAC device, wherein the rate at which the selectively
5 transmitting is performed is further based at least in part on at least a
6 portion of the information indicating the need to change the amount of
7 data being transmitted on the first network link.

1 79. (New) The method of claim 67 further comprising:
2 transmitting information indicating a need to change an amount of data being
3 transmitted to at least one of another MAC device and a client of the
4 another MAC device;

1 80. The method of claim 79 further comprising:
2 determining an extent to which a data buffer associated with the client of the
3 another MAC device contains data; and
4 preparing the information indicating the need to change the amount of data being
5 transmitted to the at least one of the another MAC device and the client of
6 the another MAC device

1 81. (New) The method of claim 67 wherein the network is at least one of a
2 metropolitan area network (MAN) and a resilient packet ring (RPR) network.

1 82. (New) The method of claim 67 wherein the information indicating a need to
2 change an amount of data being transmitted to the at least one of the first MAC device
3 and the client of the first MAC device is received in a resilient packet ring (RPR) fairness
4 message.

1 83. (New) The method of claim 67 encoded in a computer readable medium as
2 instructions executable on a processor, the computer readable medium being one of an
3 electronic storage medium, a magnetic storage medium, an optical storage medium, and a
4 communications medium conveying signals encoding the instructions.

1 84. (New) The method of claim 67 wherein the information indicating the need
2 to change the amount of data being transmitted to the at least one of the first MAC device
3 and the client of the first MAC device further comprises at least one of: information
4 indicating the need to reduce the amount of data being transmitted, and information
5 indicating the need to increase the amount of data being transmitted.

1 85. (New) An apparatus comprising:
2 a first media access control (MAC) device operable to be coupled to a network;
3 a buffer coupled to the first MAC device and operable to receive data from the
4 first MAC device;
5 a packet processor coupled to the buffer;
6 a first plurality of queues, wherein each of the first plurality of queues
7 corresponds to a respective network station; and
8 at least one shaper circuit, the at least one shaper circuit being configured to
9 dequeue data stored in at least one of the first plurality of queues based at
10 least in part on at least a portion of information indicating a need to
11 change an amount of data being transmitted to the respective network
12 station corresponding to the at least one of the first plurality of queues.

1 86. (New) The apparatus of claim 85 wherein the network is at least one of a
2 metropolitan area network (MAN) and a resilient packet ring (RPR) network.

1 87. (New) The apparatus of claim 85 wherein the buffer has at least one
2 associated threshold value, and wherein at least one of the first MAC device, the buffer,
3 the packet processor, the at least one shaper circuit, and a comparison circuit is further
4 configured to compare the at least one associated threshold value to an indication of an
5 amount of data in the buffer.

1 88. (New) The apparatus of claim 87 wherein at least one of the first MAC
2 device, the buffer, the packet processor, the at least one shaper circuit, and the
3 comparison circuit is further configured to prepare a message including information
4 indicating a need to change an amount of data being transmitted to a network station that
5 includes the first MAC device.

1 89. (New) The apparatus of claim 87 wherein at least one of the first MAC
2 device, the buffer, the packet processor, the at least one shaper circuit, and the
3 comparison circuit is further configured to determine at least one of a data transmission
4 rate and a ramp factor corresponding to a network station that includes the first MAC
5 device.

1 90. (New) The apparatus of claim 85 wherein the first MAC device includes
2 control logic configured to prepare a message for transmission on the network including
3 an indication to change a rate at which data is transmitted to the a network station that
4 includes the first MAC device.

1 91. (New) The apparatus of claim 85 wherein the information indicating the
2 need to change the amount of data being transmitted to the respective network station
3 corresponding to the at least one of the first plurality of queues is received in a resilient
4 packet ring (RPR) fairness message.

1 92. (New) The apparatus of claim 85 further comprising:
2 a second plurality of queues, wherein each of the second plurality of queues
3 corresponds to a respective network station, each of the first plurality of

4 queues is configured to store data having a first priority, and each of the
5 second plurality of queues is configured to store data having a second
6 priority.

1 93. (New) The apparatus of claim 92 wherein the at least one shaper circuit is
2 further configured to dequeue data stored in at least one of the second plurality of queues
3 based at least in part on at least a portion of information indicating a need to change an
4 amount of data being transmitted to a respective network station corresponding to the at
5 least one of the second plurality of queues.

1 94. (New) The apparatus of claim 93 wherein the at least a portion of the
2 information indicating the need to change the amount of data being transmitted to the
3 respective network station corresponding to the at least one of the second plurality of
4 queues is the same as the at least a portion of the information indicating the need to
5 change the amount of data being transmitted to the respective network station
6 corresponding to the at least one of the first plurality of queues.

1 95. (New) The apparatus of claim 85 wherein the information indicating the
2 need to change the amount of data being transmitted to the respective network station
3 corresponding to the at least one of the first plurality of queues includes at least one of: a
4 MAC device address, a data transmission rate, a ramp factor, a threshold value, a network
5 link bandwidth value, and a flag.

1 96. (New) The apparatus of claim 85 wherein the information indicating the
2 need to change the amount of data being transmitted to the respective network station
3 corresponding to the at least one of the first plurality of queues is received from at least
4 one of the respective network station corresponding to the at least one of the first
5 plurality of queues and another network station.

1 97. (New) The apparatus of claim 85 wherein the shaper circuit is a part of one
2 of the first MAC device and the packet processor.

1 98. (New) The apparatus of claim 85 further comprising:
2 a link shaper circuit, the link shaper circuit being configured to transmit data from
3 at least one of the first plurality of queues based at least in part on at least
4 a portion of information indicating a need to change an amount of data
5 being transmitted on a network link between a first network station and a
6 second network station.

1 99. (New) The apparatus of claim 98 wherein the information indicating the
2 need to change the amount of data being transmitted on the network link includes at least
3 one of: a MAC device address, a data transmission rate, a ramp factor, a threshold value,
4 a network link bandwidth value, and a flag.

1 100. (New) The apparatus of claim 85 wherein the information indicating the
2 need to change the amount of data being transmitted to the respective network station
3 corresponding to the at least one of the first plurality of queues further comprises at least
4 one of: information indicating the need to reduce the amount of data being transmitted,
5 and information indicating the need to increase the amount of data being transmitted.

1 101. (New) An apparatus comprising:
2 a first means for receiving and queuing data destined for a network station;
3 a first means for receiving information indicating a need to change an amount of
4 data being transmitted to the network station; and
5 a first means for selectively transmitting data stored in the first means for
6 receiving and queuing to the network station; wherein a rate at which the
7 first means for selectively transmitting data transmits data is based at least
8 in part on at least a portion of the information indicating the need to
9 change the amount of data being transmitted to the network station.

1 102. (New) The apparatus of claim 101 further comprising:
2 a second means for receiving and queuing data destined for the network station.

1 103. (New) The apparatus of claim 102 wherein the first means for selectively
2 transmitting data is further for selectively transmitting data stored in the second means
3 for receiving and queuing to the network station.

1 104. (New) The apparatus of claim 101 wherein the information indicating the
2 need to change the amount of data being transmitted to the network station includes at
3 least one of: a MAC device address, a data transmission rate, a ramp factor, a threshold
4 value, a network link bandwidth value, and a flag.

1 105. (New) The apparatus of claim 101 further comprising:
2 a second means for receiving information indicating a need to change an amount
3 of data being transmitted on a network link between a first network station
4 and a second network station; and
5 a second means for selectively transmitting data transmitted by the first means for
6 selectively transmitting data, wherein a rate at which the second means for
7 selectively transmitting data transmits data is based at least in part on at
8 least a portion of the information indicating the need to change the amount
9 of data being transmitted on the first network link.

1 106. (New) The apparatus of claim 105 wherein the information indicating the
2 need to change the amount of data being transmitted on the first network link includes at
3 least one of: a MAC device address, a data transmission rate, a ramp factor, a threshold
4 value, a network link bandwidth value, and a flag.

1 107. (New) The apparatus of claim 101 further comprising:
2 a means for transmitting information indicating a need to change an amount of
3 data being transmitted to another network station.

1 108. (New) The apparatus of claim 107 further comprising:
2 a means for determining an extent to which a means for buffering contains data;
3 and

4 a means for preparing the information indicating a need to change an amount of
5 data being transmitted to another network station.

1 109. (New) The apparatus of claim 101 wherein the information indicating the
2 need to change the amount of data being transmitted to the network station further
3 comprises at least one of: information indicating the need to reduce the amount of data
4 being transmitted, and information indicating the need to increase the amount of data
5 being transmitted.

1 110. (New) A computer readable medium comprising program instructions
2 executable on a processor, the computer readable medium being at least one of an
3 electronic storage medium, a magnetic storage medium, an optical storage medium, and a
4 communications medium conveying signals encoding the instructions, wherein the
5 program instructions are operable to implement each of:
6 providing a first queue corresponding to a first media access control (MAC)
7 device to which data is to be transmitted over a network;
8 receiving data destined for at least one of the first MAC device and a client of the
9 first MAC device;
10 storing at least a portion of the data destined for the at least one of the first MAC
11 device and the client of the first MAC device in the first queue;
12 receiving information indicating a need to change an amount of data being
13 transmitted to the at least one of the first MAC device and the client of the
14 first MAC device;
15 selectively transmitting data stored in the first queue to the at least one of the first
16 MAC device and the client of the first MAC device; wherein a rate at
17 which the selectively transmitting is performed is based at least in part on
18 at least a portion of the information indicating the need to change the
19 amount of data being transmitted to the at least one of the first MAC
20 device and the client of the first MAC device.

1 111. (New) The computer readable medium of claim 110 further comprising
2 program instructions operable to implement:
3 providing a second queue corresponding to the first MAC device to which data is
4 to be transmitted over the network;
5 storing at least another portion of the data destined for the at least one of the first
6 MAC device and the client of the first MAC device in the second queue;
7 and
8 selectively transmitting data stored in the second queue to the at least one of the
9 first MAC device and the client of the first MAC device; wherein a rate at
10 which the selectively transmitting of data stored in the second queue is
11 performed is based at least in part on one of:
12 the at least a portion of the information indicating the need to change the
13 amount of data being transmitted to the at least one of the first
14 MAC device and the client of the first MAC device; and
15 at least another portion of the information indicating the need to change
16 the amount of data being transmitted to the at least one of the first
17 MAC device and the client of the first MAC device.

1 112. (New) The computer readable medium of claim 111 wherein the first queue
2 is for data having a first priority level, and wherein the second queue is for data having a
3 second priority level.

1 113. (New) The computer readable medium of claim 110 further comprising
2 program instructions operable to implement:
3 providing a second queue corresponding to a second MAC device to which data is
4 to be transmitted over the network;
5 receiving data destined for at least one of the second MAC device and a client of
6 the second MAC device;
7 storing at least a portion of the data destined for the at least one of the second
8 MAC device and the client of the second MAC device in the second
9 queue; and

10 selectively transmitting data stored in the second queue to the at least one of the
11 second MAC device and the client of the second MAC device; wherein a
12 rate at which the selectively transmitting of data stored in the second
13 queue is performed is based at least in part on information indicating a
14 need to change an amount of data being transmitted to the at least one of
15 the second MAC device and the client of the second MAC device.

1 114. (New) The computer readable medium of claim 110 wherein the first queue
2 is provided in a memory coupled to at least one of another MAC device and a client of
3 the another MAC device.

1 115. (New) The computer readable medium of claim 110 wherein the first queue
2 is provided in a memory belonging to one of another MAC device and a client of the
3 another MAC device.

1 116. (New) The computer readable medium of claim 110 wherein the
2 information indicating a need to change the amount of data being transmitted to the at
3 least one of the first MAC device and the client of the first MAC device includes at least
4 one of: a MAC device address, a data transmission rate, a ramp factor, a threshold value,
5 a network link bandwidth value, and a flag.

1 117. (New) The computer readable medium of claim 110 wherein the
2 information indicating a need to change the amount of data being transmitted to the at
3 least one of the first MAC device and the client of the first MAC device is received from
4 at least one of the first MAC device, the client of the first MAC device, another MAC
5 device, and a client of the another MAC device.

1 118. (New) The computer readable medium of claim 110 wherein the selectively
2 transmitting data stored in the first queue further comprises selectively transmitting data
3 stored in the first queue in one of a first egress direction and a second egress direction.

1 119. (New) The computer readable medium of claim 110 further comprising
2 program instructions operable to implement:
3 receiving information indicating a need to change an amount of data being
4 transmitted on a first network link between the first MAC device and
5 another MAC device;
6 selectively transmitting data being selectively transmitted to the at least one of the
7 first MAC device and the client of the first MAC device; wherein another
8 rate at which the selectively transmitting of data being selectively
9 transmitted is performed is based at least in part on at least a portion of the
10 information indicating the need to change the amount of data being
11 transmitted on the first network link.

1 120. (New) The computer readable medium of claim 110 wherein the
2 information indicating the need to change the amount of data being transmitted on the
3 first network link includes at least one of: a MAC device address, a data transmission
4 rate, a ramp factor, a threshold value, a network link bandwidth value, and a flag.

1 121. (New) The computer readable medium of claim 110 further comprising
2 program instructions operable to implement:
3 receiving information indicating a need to change an amount of data being
4 transmitted on a first network link between the first MAC device and
5 another MAC device, wherein the rate at which the selectively
6 transmitting is performed is further based at least in part on at least a
7 portion of the information indicating the need to change the amount of
8 data being transmitted on the first network link.

1 122. (New) The computer readable medium of claim 110 further comprising
2 program instructions operable to implement:
3 transmitting information indicating a need to change an amount of data being
4 transmitted to at least one of another MAC device and a client of the
5 another MAC device;

1 123. (New) The computer readable medium of claim 122 further comprising
2 program instructions operable to implement:
3 determining an extent to which a data buffer associated with the client of the
4 another MAC device contains data; and
5 preparing the information indicating the need to change the amount of data being
6 transmitted to the at least one of the another MAC device and the client of
7 the another MAC device

1 124. (New) The computer readable medium of claim 110 wherein the network is
2 at least one of a metropolitan area network (MAN) and a resilient packet ring (RPR)
3 network.

1 125. (New) The computer readable medium of claim 110 wherein the
2 information indicating a need to change an amount of data being transmitted to the at
3 least one of the first MAC device and the client of the first MAC device is received in a
4 resilient packet ring (RPR) fairness message.

1 126. (New) The computer readable medium of claim 110 wherein the
2 information indicating the need to change the amount of data being transmitted to the at
3 least one of the first MAC device and the client of the first MAC device further
4 comprises at least one of: information indicating the need to reduce the amount of data
5 being transmitted, and information indicating the need to increase the amount of data
6 being transmitted.